Reducing Mishaps by 50%

THE NAVAL SAFETY CENTER'S AVIATION MAGAZINE

approach

December 2003

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The Naval Safety Center's Aviation Magazine

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On the Cover An F-14A from VF-154 "Black Knights" launches from the flight deck of USS *Kitty Hawk*. Photo by PH3 Calvert T. Frantom

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Mission Statement

Mishaps waste our time and resources. They take our Sailors, Marines and civilian employees away from their units and workplaces and put them in hospitals, wheelchairs and coffins. Mishaps ruin equipment and weapons. They diminish our readiness.

This magazine's goal is to help make sure that personnel can devote their time and energy to the mission, and that any losses are due to enemy action, not to our own errors, shortcuts or failure to manage risk.

We believe there is only one way to do any task: the way that follows the rules and takes precautions against hazards. Combat is hazardous enough; the time to learn to do a job right is before combat starts.

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REDUCING MISHAPS BY 50%

Safety Stand-Down Do's and Don'ts

Once upon a time, a safety officer had a skipper who told him to do a stand-down. "I'm sick of the same old stuff," the skipper barked. "Do something different." The safety officer, anxious for a fitrep bullet, decided to skip the usual drunk-driving monologue by a state trooper. He opted for boating safety. The problem was that when the guy who was going to talk about boating safety asked the audience how many owned boats, only three guys out of about a hundred raised their hands. "Jeez, why'd you pick such a stupid topic?" the skipper asked.

Do's

● Choose a topic that is current and that people care about. Has someone in your command been injured in a recent mishap? Has anyone damaged a piece of equipment? If there haven't been any mishaps, look for near-misses or other signs of increased risk. Focus on these situations–everyone already will be familiar with the issue and will be more apt to take away the lessons learned and preventive measures.

● Safety starts at the top, not at the bottom. The Sailors on the deck plates often don't know how to be safe. Every safety stand-down **must** be kicked off by the commanding officer, who sets the safety attitude. A positive example cannot be delegated. It is very easy to pay lip service to safety—it is even easier to spot.

● The best stand-downs are supported by the entire command, not just E-7 and below. Leadership by walking around usually is much more effective than leadership by sending e-mail and routing training-critique forms.

● Assemble topics and materials as the year progresses. Gather anecdotes, possible speakers, and photos. Lots of people have near-misses at work and at home—those people can tell stories at a stand-down. And remember, people love stories.

● Find some data that will help document the importance of your topic.

● Give your audience something to do, or at least something to look at that is visual and exciting. Make the audience answer questions, take a quiz, or add personal opinions and experiences.

● It will take time to assemble the images, data, anecdotes, and lessons learned that you'll need as raw materials. If you are talking about local problems or conditions, get a digital camera and take pictures of real stuff in your squadron, your hangar, your ship, or your workplace. People respond to what is familiar.

● If someone is going to have to stand on a stage and yak at an audience, find someone who is fun

to listen to, or, barring that, at least someone who has some good stories. This task is easier said than done, but it is crucial. Not everyone is articulate, clever and knowledgeable enough to keep an audience involved and alert. One veteran of numerous stand-downs recalls two that kept audiences awake and interested. One was a talk by the head of shore patrol in Tijuana, with pictures of jails and descriptions of silly actions of Sailors and Marines after they crossed the border. The other was a talk by a triage nurse (who worked on Lifeflight helicopters) about traffic wrecks, with pictures and graphic descriptions.

● One squadron started their stand-down with the standard briefs in the morning, then shifted to the hangar deck for an afternoon session with a variety of booths and stations set up, covering blood pressure, fire safety, fitness testing, protective gear use, diet, driver safety, and so on. Self-paced, interactive sessions are effective, and the response is excellent.

● **If you create something that others can share, send it to us, and we'll post it on our website. You'll get credit for your work, and others can take advantage of your ideas and research.**

Don'ts

● Don't put people to sleep. You'd be better off just giving them the afternoon off. At least then you gain some morale points. Boring people with a dull safety lecture just make things worse, because now they are even more allergic to safety than they were before.

● Don't wait until you have three days to put together a stand-down and you are out of ideas. As usual, you can have it fast, or you can have it good, but you aren't going to have both. Opt for starting early.

● Don't reinvent the wheel—you can borrow and adapt someone else's work or ideas.

● Don't fumble around with the electronic equipment as you start. Get it ready early, and check it in plenty of time to troubleshoot problems.

● One veteran of countless stand-downs says, "The worst are those with 1 or 2 hours of monotone '70s-vintage safety videos, while drills, maintenance and flight ops abound throughout the ship."

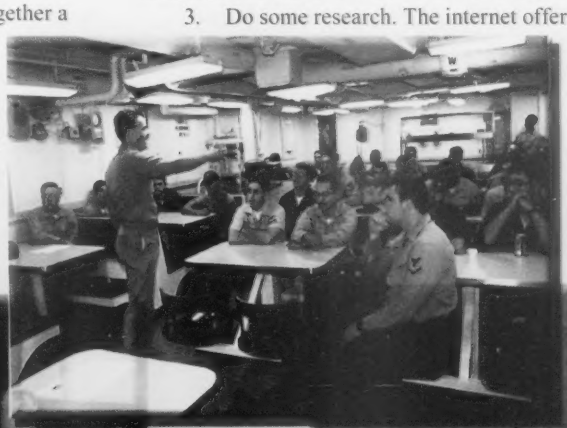
● Learn from the mistakes of others.

Template for a Safety Stand-Down PowerPoint Briefing

1. Support your topic with data, anecdotes, and other sorts of documentation. Hazards are rarely a matter of perceptions or feelings—either the risk exists, or it doesn't. Are people getting injured? What sorts of mishaps are showing up at sick bay? Is equipment getting ruined because of accidents? Concentrate on actual, local problems and hazards. Then expand if necessary.

2. Digital cameras are quick, easy and effective. Take pictures of mishaps waiting to happen, or people doing stuff wrong or cutting corners. If you have a chance to photograph an actual mishap scene, make sure the resulting images aren't offensive to the people who were involved in the mishap.

3. Do some research. The internet offers tons of sources of expertise on any topic you can name. You may need to make some phone calls to local experts, too.

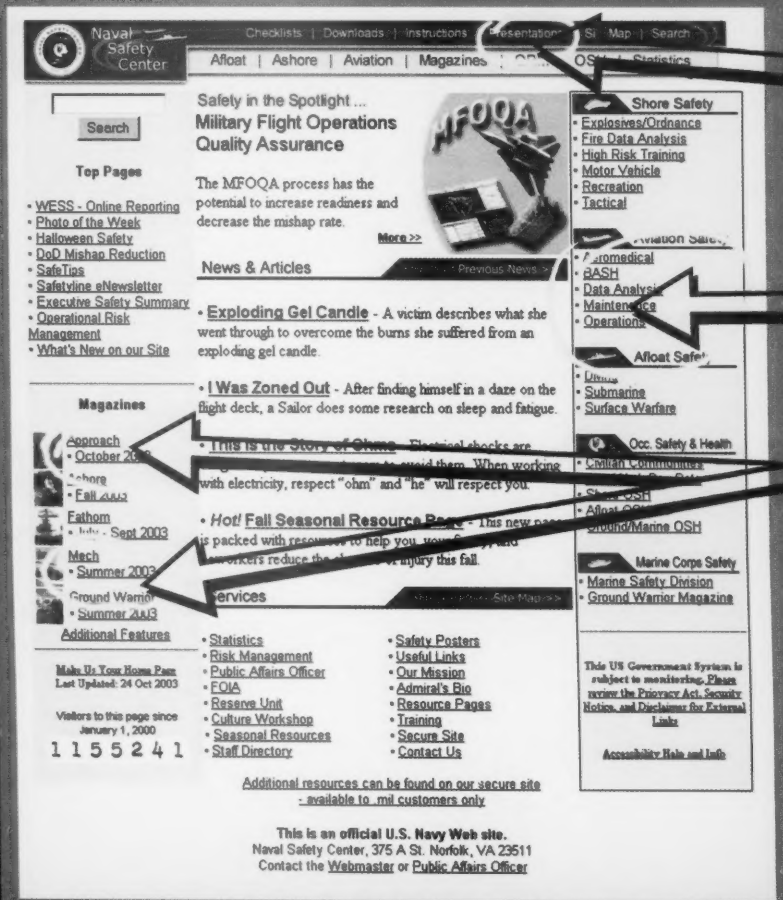


WORK ZONE

REDUCING MISHAPS BY 50%

Need material for your safety stand-down?

The Safety Center website is a great place to find material that will help get the right information to your shipmates. Commands are encouraged to dedicate their next safety stand-down to the mishap-reduction effort. Visit our website at www.safetycenter.navy.mil



● **Presentations: Safety briefs on a multitude of topics, including HFACS, ORM, CRM, groundcrew coordination, and how to fill out an SIR package. Find material ready to use or update to fit your standdown needs.**

● **Aviation safety web: This section of our site has information on all types of topics: aeromedical, operations, maintenance, you name it.**

● ***Approach* and *Mech* magazines: Past issues are online, along with tons of bonus material that only can be found on our website. Unpublished articles, photo galleries, videos, posters, and more are available for download.**

● **Ultimate Guide to Aviation Safety: An interactive CD-ROM you can request from us that truly lives up to its name. Find it at www.safetycenter.navy.mil/aviation**

Toward the Goal:

What Our Surveys Show

When a squadron schedules and receives one of our Aviation Safety Surveys, the squadron skipper ends up with a snapshot of his command's safety posture. The relationship of the survey team to the surveyed unit is that of a consultant to a client; a survey is not an inspection.

As we work to reduce mishaps, our survey teams collect a wide variety of feedback that, at one end, shows squadrons are doing some very good things, while at the other end, indicates there are still challenges out there. We must continue to work to achieve a 50-percent mishap reduction.

◆ **Good**: Feedback on **ORM training**. Almost every Navy squadron surveyed is using CNAF's ORM University online. This online asset provides a standardized, user-friendly method of multi-level ORM training to all hands. Although Marines have not had access to ORM University, since October 2003 the USMC has developed online ORM courses at www.marinenet.usmc.mil

◆ **Good**: The **Total Risk Assessment and Control System (TRACS).** The system is up and running on CNAF's ORM website. with most of the early glitches resolved. However, only one USN squadron surveyed in last FY used TRACS regularly. Most squadrons had tried using TRACS, but because of early problems with the program, never came back.

◆ **Challenge: Squadron manning.** With the normal flow of people in and out of squadrons, manning can be a challenge. Efforts are ongoing to ensure commands have the right NEC/experience level mix of personnel.

◆ **Challenge: Hazard reporting.** While we receive many reports, aviation HAZREPs are still underreported. Telling everyone about your mistakes and lessons learned prevents other from learning the hard way.

◆ **Good**: The use of **safety program tools.** An increase in aviation-safety surveys, culture workshops, and online MCAS/CSA (maintenance climate assessment survey/command safety assessment) surveys have given COs the tools to measure and verify their unit's safety climates. CNAF has provided $50,000 to the Naval Safety Center to fund newly qualified, active-duty culture-workshop facilitators.

◆ **Challenge:** Tasking. During periods of high tempo we must use risk management to assess and evaluate all actions.

To reach the CNAF website and get more information on the topics in this article, click on www2.cnap.navy.mil–Ed.

Crew Resource Management

Christmas

Decision Making

Adaptability/Flexibility

Situational Awareness

By LCdr. Brad Sultzer, USCG

Just another duty day at Coast Guard Air Station, Barbers Point, Hawaii, and I was the duty C-130 search-and-rescue aircraft commander.

I was scheduled to fly a first-pilot check flight at 1230. At 1115, I got a call to prepare to search for a missing 30-year-old man in a 12-foot kayak, northwest of Fanning Island. This sparsely inhabited island lies 150 miles from Christmas Island, Kiribati. It is about 1,100 miles south of Hawaii, or four hours flying time in our Hercules.

We loaded CG1703 with the maximum 62,000-pound fuel load, which gave us about 12 hours of flight time. On takeoff, I never would have imagined the mission would be one of the most demanding search-and-rescue missions of my 25-year Coast Guard career, including more than 20 years as a pilot and crewman in the C-130.

During the preflight planning, we contacted the rescue coordination center (RCC) Honolulu and voiced our concerns. We had to confirm permission to recover and to refuel at Christmas Island's primitive airport, following the search

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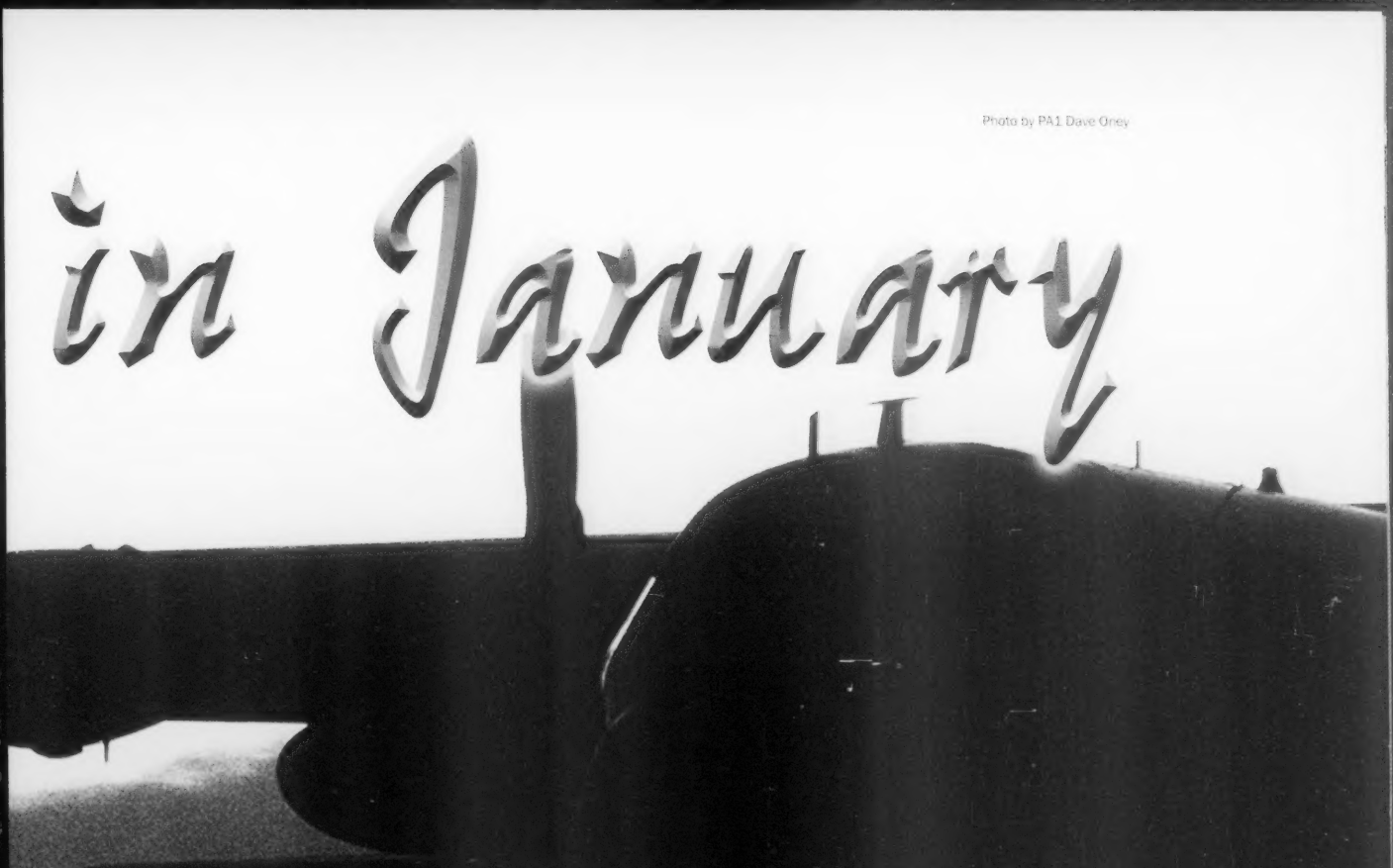


Photo by PA1 Dave Oney

in January

for the kayaker. We also needed to confirm the airport would be open, and the airport lights and non-directional beacon were working. We still awaited a response from RCC Honolulu when we departed.

Our plan was to get on-scene as soon as possible and search until dark, then recover at Christmas Island. We knew once we flew beyond the point where we could return directly to Barbers Point, we were committed to landing at Christmas Island; no other divert options were available.

After takeoff, we reviewed the search-action plan CGD14 RCC had given us, and we still had questions about the best way to prosecute the mission. If we flew as planned, we wouldn't have enough fuel to recover anywhere but Christmas Island. I had heard previous flights had had problems with Christmas Island's airport lighting. I wanted to be certain the airport was open before I allowed my fuel to go below the minimum to reach another location.

We felt the search area was too small and concentrated, and it didn't give us the best chance to rescue the kayaker. He had been lost at sea through the night and already was 24 hours overdue. We needed to get on-scene, look at a large area before sunset, recover at Christmas Island, refuel, and be ready to search at first light the next day.

Within 20 minutes after takeoff, we called RCC. We had hoped to confirm the fuel and lighting issues and to get permission to double the size of our search area. RCC responded—opening the track spacing, or the distance between legs, but not to the extent we had requested. They directed us to complete the area search and then to search at the aircraft-commander's discretion. Later, we were told that the airport lights were working and that fuel had been arranged. We were good to go.

For the next four hours, we readied the aircraft for the search. We got a raft and marine-location markers ready to drop. We discussed completing the area search, then doing a shoreline search of Fanning Island, followed by a trackline search 50 to 60 miles out from the island. If daylight allowed, we would conduct another search west of the originally assigned area.

As we arrived on-scene, the weather and sea conditions were good. We dropped a

datum-marker buoy (DMB) to get drift information, which would help us if we needed follow-on searches. Also, our search radar was intermittent, operating only five to 10 percent of the time. The loss of radar would hurt our chances for success. The navigator and avionicsman worked hard to get the radar up; they kept resetting the equipment and occasionally would get a few minutes of active radar searching.

We completed the original search area, then we checked the perimeter of Fanning Island as planned. We completed the trackline search out to 60 miles, guessing the direction a drifting kayak would travel. As it got dark, we rushed to begin our second search area; we were running out of time to find the kayaker. Another night adrift would result in a larger search area the next day. More importantly, it meant the kayaker would spend another day exposed to the elements, perhaps without food or water.

During the second search, we discussed that we had only five minutes remaining (one more 10-mile leg) before we would have to depart because of darkness. On the last leg, the radar came up for a few minutes, and the navigator saw a small blip. He gave us a steer of 330 degrees at seven miles. As we made a 90-degree turn toward the contact, the radar again failed. We continued to the target, and as we approached, my copilot, Lt. Chris Shivery, yelled out, "There he is; he's flashing a light."

As I flew over, I could see the faint outline of the kayak and the man on board. He had drifted 70 miles from Fanning Island. Unfortunately, we couldn't see him or the kayak when we again passed over him a few minutes later because darkness had set in.

We immediately prepared to drop a radio to the kayaker; I hoped to have some horizon available during the drop run. We normally drop rescue equipment from an altitude of 200 feet at 130 knots. Flying the aircraft that low in inky-black instrument conditions is much harder than completing the maneuver in daylight visual conditions.

We worked fast, but the droppable radio didn't work. We then decided to drop an MA-1 survival kit, which included a raft. The raft would provide a safe place if the kayak overturned or sank, and it was equipped with a survival radio. We made the drop a few minutes later but, because of darkness, could not tell if it was close to the kayak.

We contacted RCC and relayed the latest information. RCC located an automated mutual-assistance vessel-rescue-system vessel (AMVER)—a large cargo ship—approximately 100 miles away and diverted it to the scene. The RCC also said there was a tugboat in our area, the Tender II. We dropped another DMB in the position of the kayaker and departed the scene to locate the Tender II, which was about 15 miles away. We spoke with the skipper of the tugboat, relayed the situation, and requested that he divert to pick up the kayaker. He said he was low on fuel, had poor navigation equipment, and would have a hard time locating the kayak; however, he agreed to help. We also kept the AMVER vessel en route, in case the Tender II could not locate the kayaker. We gave the tugboat skipper the kayak's position.

We heard intermittent audio and beacon

transmissions from the radio we had dropped in the life raft. The signals were unreadable. We tried to contact him, but he couldn't operate the distress radio.

As we orbited, we dropped illumination flares to provide a visual reference for the life raft. Within an hour, the tugboat was in a position where we could see it and the flares at the same time. We dropped more flares to vector the tugboat to the raft. We didn't know it, but the kayaker had abandoned his kayak and boarded the life raft after our aerial delivery. As the tugboat got closer, we kept providing steering information. We also continued orbiting and illuminating the water with our landing lights as the tugboat arrived. Fortunately, the tugboat located the man in the raft and brought him and the raft on board. The kayaker was safe—a great outcome to a difficult search.

We released the AMVER vessel and obtained needed information from the tugboat. As we departed for Christmas Island, the tugboat skipper said if we had not remained on-scene to vector him, it would have been impossible to locate the raft.

We relayed the information to RCC as we approached eight hours into the flight. We were unable to tune and to identify the Christmas Island non-directional beacon (NDB), the only navigational aid at the airport and the only legal means of shooting an instrument approach to the field. We were unable to contact Christmas personnel until we were about 50 miles out; the time was 2330.

At 10 miles out, we spoke to someone at the field, which is located in a remote portion of the island. He told us there was no lighting at the airport, including runway lighting and other lights in the small shack next to the runway. Then he told us the non-directional-beacon antenna had blown down during a recent storm. The CG1713 flight deck got very quiet. We would have to identify the field and land without navigational aids or any surface lighting. We were flying an approach to a black hole, in the rain, with a cloud deck at 700 feet, and no navigational aids. We explained we would be unable to land if they did not mark the airport in some way.

Christmas told us they had two old firetrucks parked at the end of the runway, and the headlights were pointed down the runway. The weather was not good. As we crossed over the island, I was in and out of clouds and rain. I saw very little light on the island but absolutely nothing at the field. I was concerned as we circled the island with our landing lights out, searching for the taillights of the two trucks. We were trying to make an approach and land, in marginal weather, to a field we could not identify. I had no options to divert to another field. One way or another, we were going to land at Christmas Island.

On the first pass, we didn't see the airport or any sign of the trucks. As we did a go-around at 400 feet, we reentered the clouds and tried to turn to a reciprocal heading of 270 from the runway heading; the flight deck was busy. My crew did everything possible to help me find the runway. My copilot called out altitude and airspeed, the navigator changed our GPS (uncertified for approaches) to provide a 090 course to the runway heading. The avionicsman told RCC he couldn't talk at that moment because we were busy trying to find the airport and land the airplane. The crew in the back of the aircraft was cinching down their safety belts and shoulder harnesses.

Christmas in January

On the second pass, we saw lights off to the right. There were no other visual references, but one light was a little brighter at about 3 o'clock, about three miles away. I focused on that light and a few others in the area. We didn't find out until much later those lights were nowhere near to the airport; they were at the only hotel on the island, the Captain Cook.

At the end of the second pass, the copilot saw a faint red glow to the left of the aircraft. We turned in that direction, and, as we passed, we felt they may have been the trucks. They were small, old firetrucks, probably from the 1950s or 1960s. They did not put out any appreciable light, and the drivers had abandoned them, probably afraid to remain in them as we tried to land. After we passed and began our second missed approach at 400 feet, I saw what appeared to be the first 50 feet or so of the runway threshold. With my lack of depth perception, it looked like a building standing vertically.

We continued turning to downwind on the go-around and once again reentered the clouds. Once we passed the glow of the trucks, there was no lighting or visual references. With flaps at 100 percent, I advanced the throttles toward maximum power. We climbed rapidly with flaps at this setting, and I pushed over the nose to maintain airspeed and to prevent reentering the clouds. As we passed through 1,100 feet, I told Chris what I was doing, and we would get it back down. We worked our way down to 1,000 feet, then to 600 or 700 feet, as we turned final.

Chris said he saw the trucks. As I controlled altitude and airspeed during the descent, I faintly could see the taillights, but I had no visual reference for where the runway began or ended. I saw the light from the trucks and the glow of the headlights beyond the red taillights. As we rolled out on final, I worked to obtain a 090-degree runway heading, and to continue descending to a point were we might land if the runway environment became apparent. I didn't want to take another go-around. I rolled out on final and steadied the airplane toward the red lights.

Between 150 and 200 feet, I told Chris to turn on our landing lights. We had left them off because, when they were on, we could see nothing but gray haze and rain on the windscreen. As we flew over the trucks, I saw the runway environment and made the final descent. The trucks disappeared under the aircraft as I brought it into a flare, and we touched down. I applied full reverse and firm braking to stop us. I didn't know at what point on the runway I had touched down or the distance I had covered during the landing roll. When we came to a stop, I turned the aircraft around and called for the after-landing checklist. After the nine-hour flight, I was relieved and very thankful to be on deck.

After the flight, we celebrated a great rescue and a safe recovery. I have been in similar situations during my flying career with the Coast Guard and always feel the same way when the flight is over. I feel you only have so many of those kinds of flights in you, and you leave a little of yourself in the plane when you walk away from one. I felt that way that night; we all did. It felt like Christmas to us.

LCdr. Sultzer flies the C-130 from USCG Air Station, Barbers Point, Hawaii.

US Coast Guard Photo

Habit Patterns, Who Needs Them?

Photo by Matthew J. Thomas

By Ltjg. Paul Slaybaugh

Being a first-cruise JO brings many challenges. You have the whole flying-around-the-boat thing, getting used to living at sea, working with all the other guys in the air wing, learning the general ins-and-outs of mission planning, and doing your job in the jet on long missions over bad-guy country. And, oh yeah, the bad guys are shooting at you. It's a lot to deal with for a nugget fresh out of the EA-6B RAG, with less than 300 hours in the Prowler.

As ECMOs, we spend two-thirds of our flights in the back, as either ECMO 2 or 3, operating the ALQ-99 on-board system and the tactical-jamming system. We also rotate up front with the pilot to help him navigate. The rotation cycle means we don't do the same job every time we fly, making habit patterns more difficult to develop.

Habit patterns are something I never thought much about, until recently, when I almost took a front-seat cat shot without being strapped into my harness. Sure, it's part of the checklist, "armed top and bottom, attached six." Those words flow right out of my mouth without even thinking—bad habit pattern.

As our director taxied us forward into the shuttle, seconds from being shot out over the water at 135 knots, I locked my harness and leaned forward—good habit pattern. To my surprise, my harness did not keep me locked in place: I could lean completely forward. Fortunately, I had a backup-habit pattern to make sure I'm strapped in—my backup pattern saved me.

I expressed my shock over the ICS to alert the crew, "Hey, my #@%*&* harness won't lock."

As you might imagine, this announcement got my pilot's attention. He looked me over for a second or two, then reached over, without saying a word, and slapped me upside the helmet with the Koch fitting on my shoulder strap.

After the flight, I thought about how such a thing could have happened. I decided my problem came down to a lack of consistent habit patterns. Every time I climbed into the front seat, I would set up my "nest" a different way. Sometimes I would put up my boarding ladder first, sometimes I would turn on the radios and get them set up, sometimes I would strap in (sometimes not). I used a different way every time, all sort of haphazard. My lack of consistency could have been tragic.

So, to answer the question, "Habit patterns, who needs them?" I believe we all do.

Ltjg. Slaybaugh flies with VAQ-131.

Photo by PHAN Ryan T. O'C...

Almost

By Lt. Paul Brantuas

Fresh off a 10-month extended deployment on USS *Abraham Lincoln* (CVN 72), the one thing we didn't do a lot of was landing on runways, much less on wet runways. The idea was to crawl, then walk before we start to run; this flight was supposed to be part of the walking phase.

We briefed a section-bombing hop down to Dare County, which, because of weather and range time, would be a challenge to complete. Both aircrews manned-up, and, like any good Tomcat, we had to troubleshoot. After failing to get the starter to engage the right motor, we swapped jets while our lead got ready to pull out of the line. The weather started to move in, and it didn't look like we would make our range time. We signaled to our lead to press without us, and we would proceed as singles.

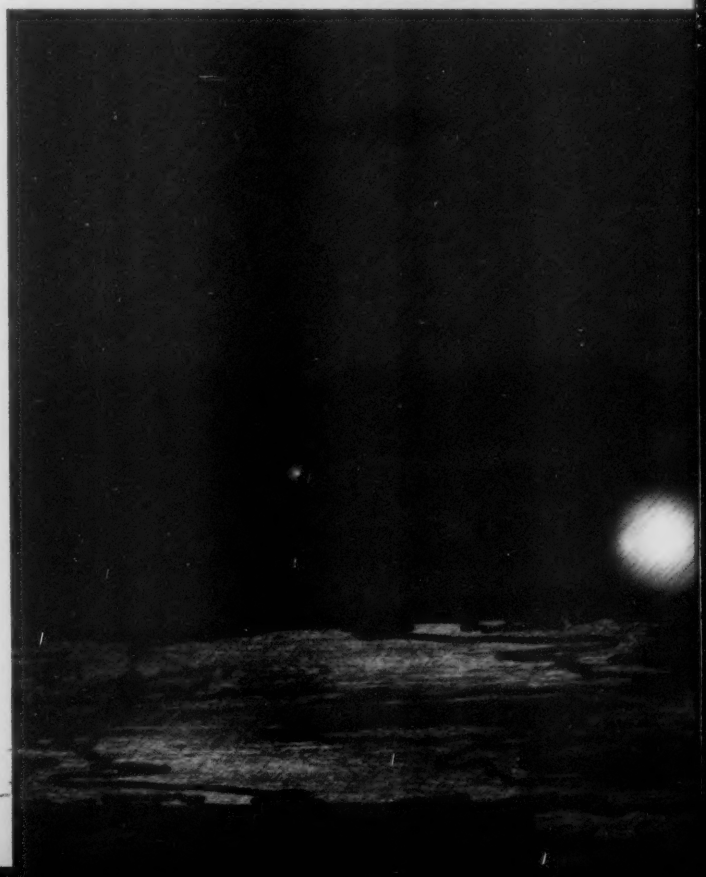
After getting started, we went to the fuel pits to top off, got final-checked, and called for taxi. As we approached the holdshort of runway 23L, the weather to the southwest deteriorated rapidly. My gut feeling was to back-taxi and call it a day, not just because of the weather, but nothing was going smoothly, and we would be lucky if we got into Dare County at all. We decided, as a crew, to press and try and make the flight happen. Besides, I've tanked in worse weather at night; off the ship, I could do anything.

We took off and flew south on radar vectors to Dare County. The ride down was a bit bumpy until finally we broke out and could maintain VFR. We managed to squeeze in co-use and conducted our mission—thanks to the Gunfighters of VF-101. It was time to RTB and let the fun begin.

While getting vectored into the GCA pattern, it almost was as dark as night in the cockpit because of the thunderstorms. The turbulence made it a challenge to maintain 2,000 feet. The wheels in my head started to turn, and I thought we needed to hang on to some fuel in case we diverted. We didn't want to be too heavy on a wet runway, but, yet, we wanted enough fuel to shoot another approach and divert, if necessary. As we turned onto final, we broke out at 10 miles. Surprisingly, the field appeared to be unscathed by the surrounding thunderstorms. My thoughts were on the runway conditions, but, because of the relatively good weather at the field, I failed to ask or even talk about the conditions with my RIO.

We were handed off to the final controller and told we were on a PAR to 23R, an 8,000-foot runway, as opposed to 23L, a 12,000-foot runway. Once again, I was thinking but not talking about requesting 23L; I could see five aircraft backed up at the holdshort, waiting to depart on 23L. I rationalized that 8,000 feet was plenty of runway to stop, even if it was wet, because, on a dry day, I'm getting off at the six board, anyway.

We continued the approach and landed on 23R, and began our rollout: throttles to idle, stick full aft, good spoiler brakes. While we rolled out, I noticed large amounts of standing water passing by. At the four board, I heard, "90 knots," 10 knots faster than where we wanted to be but not really an issue, yet. Typically, you don't want to apply the brakes until 80 knots, but, considering the situation, I made a smooth depression on the brake pedals. It appeared nothing happened, so



I released the brake pressure and reapplied it. The jet reacted with a yaw-skid to the right, and I was looking at the grass on the side of the runway. The hair stood up on the back of my neck. As the jet tracked to the right, I engaged nosewheel steering to point us down the runway. I gave the anti-skid another chance. We were slowing, but my "spidey sense" told me we still were too fast.

I heard from my RIO, "55 knots," as we passed the two board; I thought this would be a close one. I looked at the gear as I worked hard to keep the jet on the runway. I missed the gear before getting the hook down. So, now, we've missed the wire, we're fast, and we've lost confidence in the anti-skid; I decide to turn off the anti-skid.

In the Tomcat, passing through 15 knots with the anti-skid on causes loss of brakes, so we land with it on and turn it off at the end of a landing rollout. I gingerly applied brake pressure to avoid blowing a tire, and we just were gliding, as if on an ice rink. We still had the jet on the runway, but we were staring at the approaching grass. I briefly thought of turning left into the holdshort, between the two runways, but I didn't want to risk sliding out sideways or running on the active 23L. Almost stopped, I turned hard right to keep us on the runway, but we skidded off, tail end first, with the nose tire on the runway and the mainmounts in the mud. I turned off the engines, and we sat in disbelief at the end of runway 23R, motors off.

I have no doubt that, when I initially applied the brakes, we hydroplaned. The sensation was that there was no braking effect at all. When I reapplied the brakes, the right tire probably made contact with the surface, while the left tire still was hydroplaning, thus the pull to the right. As I looked at our skid marks, the last 1,000 feet of marks were white. If you look in NATOPS, you'll find a section on reverted-rubber skid. This condition occurs when the tires lock up, and they get so hot they form a layer of steam underneath them, and they virtually have no contact with the ground.

Looking back, we could have avoided going four-wheeling had we asked for the long runway. The hydroplaning may or may not have been avoided; however, had we asked for the runway conditions on the approach, we could have determined whether to take a short-field arrestment. Landing with a centered ball puts you about 800 feet down the runway. If we landed shorter, we might have been OK. Also, if I had left on the anti-skid a bit longer, we might have made it.

Damage to the jet was minimal because we managed to keep the jet tracking down the runway. Going off at the three board could have been ugly. By the way, in the safety report, the tower reported braking as "good" at the time of our landing. Just remember, if you know that the field is wet, proceed with caution.

Lt. Brantuas flies with VF-31.

Had It

Photo by Matthew J. Thomas
Modified

I heard from my RIO, "55 knots," as we were passing the two board; I thought this will be a close one.

Buckeye Brake Failure

Photo by Matthew J. Thomas
Modified

By Lt. C. A. Godlewski

Our division was scheduled for an early morning launch. We briefed the standard division-training flight, except that we would launch and recover as sections because of the weather conditions. The flight would join in the area via a TACAN rendezvous. The weather was 1,000 feet overcast, and the latest PIREP reported clear above 4,000 feet. The forecast called for degrading weather conditions an hour after our scheduled land time.

The division taxied as two sections to the duty runway; I was lead of the second section. We conducted a section takeoff and broke out at 4,000 feet as expected. I gave my wingman a courtesy fuel-transfer check, then kicked him into cruise position. Atlanta Center cleared us into the MOA, and we conducted the TACAN rendezvous with the other section. The division leader then balanced the flight and began the training sequence.

We soon finished the sequence and headed home with 100 pounds of gas above our bingo. ATIS reported the weather had dropped to 700 and 2 with mist, 100 feet above TACAN-circling minimums. The weather was deteriorating sooner than we had anticipated.

On our initial check-in with Atlanta Center, the division leader requested our clearance back to base. He told the controller we wanted to recover as two sections and requested an IFR clearance for my section. Our leader also wanted my section to recover first because I had the lowest fuel state. After Center passed the clearance to my section, the division leader kissed us off, and we headed home.

We checked in with Meridian Approach Control and were sent to a holding fix, with no expected clearance time—just hold as published. Holding was not what I wanted to hear with the degrading weather and getting low on gas. While heading to the fix, we heard a call that a T-45 was having an emergency, and they were clearing out the airspace for his approach. I hoped the T-45 soon would be on deck because a quick calculation of my fuel state revealed I would be at minimum after one turn in holding.

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PUBLICATION MAY A
THE MICRO

We entered and reported holding. On our first inbound leg, I called approach and declared minimum fuel. A few seconds later, the other section entered holding 1,000 feet above us and also declared minimum fuel. Moments later, Meridian Approach said my section was next for the approach and gave us a vector for base leg.

We dirtied-up above the weather after rolling out on a 12-mile final and descended into the goo. I ran my landing checklist, and my left brake felt sluggish at first, but then it pumped up firm. As we approached the TACAN-circling minimums, I started to see the ground,

I decided to go for the long-field gear and received clearance. I used my right brake to take centerline and, hopefully, to help slow me a little bit. I dropped the hook and checked my airspeed. The indicator showed 50 knots as I approached the long-field gear. My plan still was to ground loop the aircraft if I missed the gear. I also disengaged the idle stop, so the motors could be shut down to prevent FOD damage if I went off the prepared surface. As I crossed the gear, I felt the tug of the hook catching

and I knew we would break out soon. We broke out at 650 feet, and I had the field in sight, just 50 feet above minimums. I looked back to my wingman and signaled to see if he also had the field in sight—he did. I kissed him off and lined up on the left side of the runway. I tested my brakes on the rollout, and the left brake went to the floor. I pumped it to get pressure but to no avail. The right brake was working fine.

I didn't have many options, and only seconds remained to decide what to do. I could do a touch-and-go into the weather and come back around for another GCA to a short-field arrestment. Another option was to take my chances with a long-field arrestment—if my wingman could clear me for the gear. I was low on gas and didn't want to launch back into the worsening weather conditions. I could get back around, but it would be close with fuel. If I went for the long-field gear and didn't catch it, I could use my right brake and try a ground loop to a stop.

the wire, and the aircraft quickly stopped. What a relief.

When you only have a moment to decide what to do, you can rely on experience and training. Our NATOPS procedure for a brake failure discusses doing a touch-and-go and coming around for a short-field arrestment, or securing the motors and trying to stop or ground loop on the prepared surface.

In our squadron-formation brief, we discuss what to do in the event of a dual high-speed abort (or, in this case, a section full stop with a brake failure). Lead must pass up the gear to allow Dash 2 to use the gear, unless Dash 2 can stop short of the gear and allow lead to take the gear and centerline.

NATOPS and our squadron-formation brief covered this emergency and gave me (in a matter of seconds) two clear courses of action to choose from. Good training allowed us to accomplish our training mission and to get the aircraft and crew on deck and stopped.

Lt. Godlewski flies with VT-9.

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Photo by Matthew J. Thomas
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Lt. Godlewski flies with VT-9.

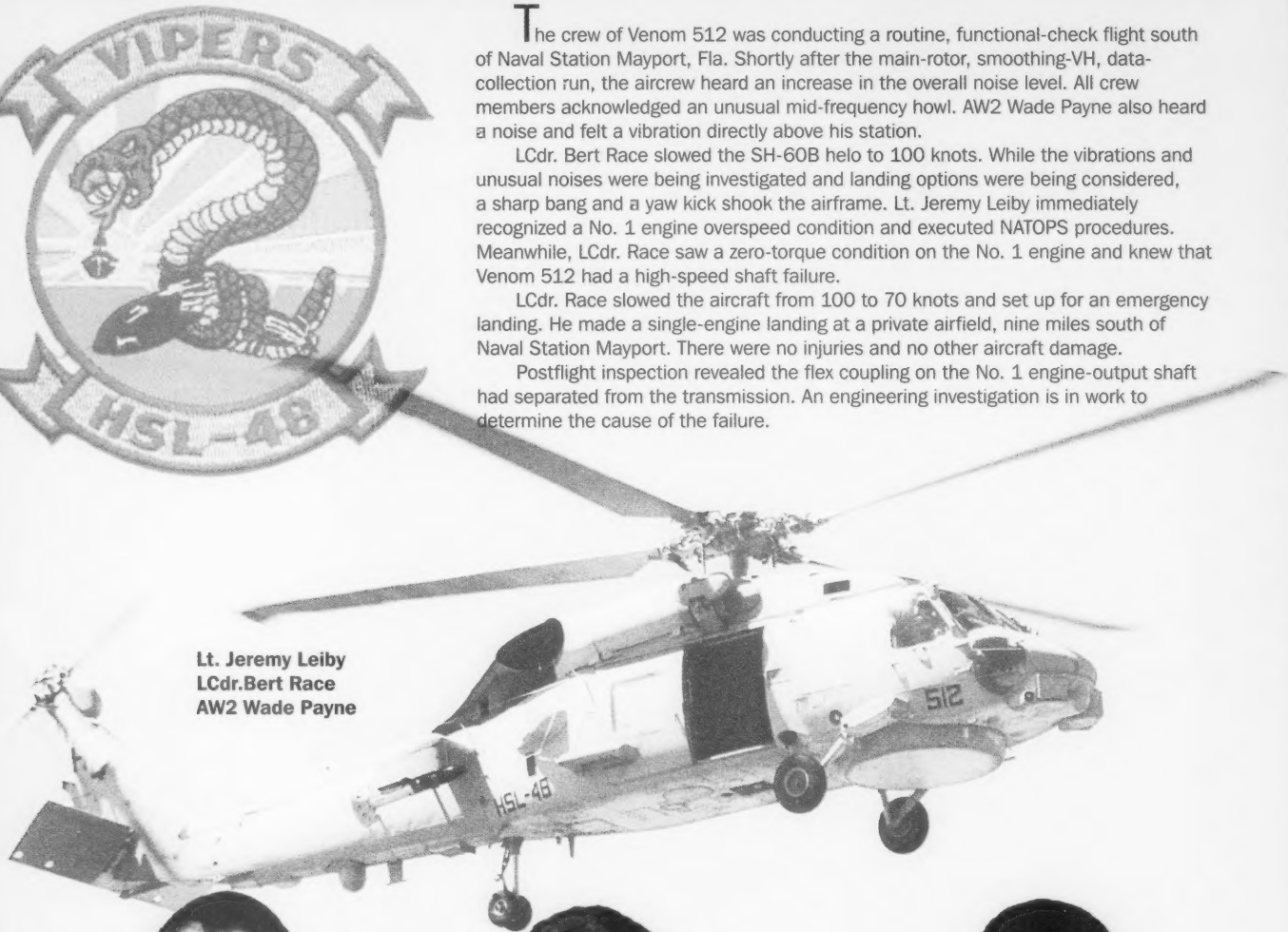
BRAVO Zulu

The crew of Venom 512 was conducting a routine, functional-check flight south of Naval Station Mayport, Fla. Shortly after the main-rotor, smoothing-VH, data-collection run, the aircrew heard an increase in the overall noise level. All crew members acknowledged an unusual mid-frequency howl. AW2 Wade Payne also heard a noise and felt a vibration directly above his station.

LCdr. Bert Race slowed the SH-60B helo to 100 knots. While the vibrations and unusual noises were being investigated and landing options were being considered, a sharp bang and a yaw kick shook the airframe. Lt. Jeremy Leiby immediately recognized a No. 1 engine overspeed condition and executed NATOPS procedures. Meanwhile, LCdr. Race saw a zero-torque condition on the No. 1 engine and knew that Venom 512 had a high-speed shaft failure.

LCdr. Race slowed the aircraft from 100 to 70 knots and set up for an emergency landing. He made a single-engine landing at a private airfield, nine miles south of Naval Station Mayport. There were no injuries and no other aircraft damage.

Postflight inspection revealed the flex coupling on the No. 1 engine-output shaft had separated from the transmission. An engineering investigation is in work to determine the cause of the failure.



Lt. Jeremy Leiby
LCdr.Bert Race
AW2 Wade Payne

Risk Matrix–Reloaded

By LtCol. Peyton DeHart, USMCR

At a seminal moment in the movie "The Matrix," Morpheus offers Neo the choice of taking a blue pill and returning to the cocooned world of seeing what he wanted to see, or taking a red pill to see the world as it really is.

I was sitting in a comfy, form-fitted pod that throbbed in a soothing fashion around me. A wire ran from the back of my head to a signal processor that sent sound and voices into my ears. I effortlessly was flying along the shoreline of Lake Michigan, looking at the million-dollar homes slide past on my left. Life was wonderfully "blue pill."

The lieutenant in the front cockpit of the AH-1W asked why we would travel so far from home for a static display in Manitowoc, Wis.

"I think it's just a leftover frag request no one else wanted," I said.

"Well, why go?" he asked.

"Because every Wisconsin air show that is not in Oshkosh tries to prove it is better than the one there, which means taking care of those who serve as static displays. Stay alert. This is a Friday afternoon, and we're flying due north along a no-brainer navigation route of shoreline with a billion-dollar view. You'd best keep an eye out ahead," I replied.

"Why?" he asked.

"Because any second now, a light, civil aircraft ought to materialize out of the haze, headed due sou…"

A Cessna 172 materialized out of the haze 1,000 feet in front of us, headed straight for our cockpit. Bottom collective, 60-degree angle of bank, slicing dive to the right, toward the offshore water.

"Do you think he saw us?" he asked.

"No, there was no reaction from him," I said.

"Well, how did you know something was going to be there?"

"I try not to be lulled by what I want to see. If we focus on the potential risks of this flight, we can work to avoid them—like being prepared to miss a head-on collision," I said.

Years ago, while I was flying as a copilot during an exercise in Norway, my pilot told me to keep an eye on the high ridgelines of the fjords to see the power-line poles perched on top.

"Why not just look for the wires?" I had asked.

"Because you can't see them in time," my pilot replied. "If you see power poles, you know there are wires, and you know you can't see them. It's time to pick another route."

Five minutes later, over squadron common, came the broadcast, "W-i-i-i-r-e-ss!"

"Hmmm," my pilot said, "I bet he about pulled a loop there when he finally saw the wires; he wasn't watching the ridgelines."

You can see the world you hope to see, or you can see the real world full of risks, assess them, and figure out the work-arounds. Take the red pill.

LtCol. DeHart flies with HMLA-773, Det. A, Belle Chasse, La.

Photos by PH3 Phillip A. McDaniel and Mathew J. Thomas
Modified

TOO MUCH EXCITEMENT

By Cdr. Jeff Penfield

The first night of the "big show," and I was part of many packages going downtown. From the time we prepped for the mission through execution, I knew it would be a mission I never would forget. I was right but for a completely different reason.

We were part of a multitude of packages. The mission was similar to what we had trained for: night launch, big-wing tanking, rendezvous, ingress, egress, more big-wing tanking, and night recovery. Other than being the real thing, it was not much different than many other missions we all have been on—until things went wrong.

Our big-wing tanker for the evening was a WARP (wing-air-refueling pod)-configured KC-10. Thirteen of us were scheduled to cross the two hoses. On arrival, I was about number eight in line. The wait was long enough that we began discussing the fuel-bingo numbers to the diverts on the auxiliary radio. The situation rapidly deteriorated as we went from planned diverts to emergency-divert options.

When it was my turn at the hose, the tanker, of course, was in a turn with a bunch of basket motion, 3.8 on the gas. Just another plug: I took my time, made my play, first time right in the sweet spot, sierra hotel.

But wait, what is this? The mother of all sine waves. Where did that come from? It didn't matter, I didn't have time to react. With one quick whip, the tip of my probe broke off. I now was flying a very thirsty machine, low on fuel, with only one way to get that fuel: on the ground. Emergency divert, here I come. With a little help from a wingman, I got steered to the closest divert.

Thoughts started to race through my mind. "Good waypoint and TACAN. XX miles south. OK, no sweat. Can make it easily." But then things really got interesting.

We switched the primary radio to the sector control frequency. "Hey, this is me on an emergency divert to field X. Is the field open? Yes, sierra hotel. Do you have some freqs? Standby, yes here they are. Range, fuel, no need to climb. Will be tight but doable. Keep the ordnance. No need to start an international incident. Start making the calls. No one home on approach. OK, over to tower. No one home on tower. Back to approach. Still, no luck. A quick look at the divert pack. None of those freqs work either. Getting closer, time to start coming down. Back to sector control. No luck with them, either. Mmm, not good. Well, I'm landing regardless. Up on guard frequency hoping for a little luck. Got a lot of luck. All bad. No one was interested in speaking to little ol' me. OK, find the field and land. Sort it out later. Now, on with the true excitement.

"Inside 20 miles from the field. TACAN steering up for runway orientation. Getting closer and closer. No significant weather to worry about, except it sure is dark and hazy. Fuel getting low, but almost there. Where is the runway? That's the $65-million question: Where is the runway?

"Nothing is looking right. The TACAN says it ought to be right there. Only darkness is 'right there.' What's that over there? Maybe the field has a big displacement between the TACAN and the runway. Go check it out. Looks short but doable. Two rows of parallel white lights in the middle of nowhere. I made it. Wait a minute. That doesn't quite look like a runway, more like a road—discernable by the cars traveling up and down it. Agh! Back to the question: Where is the runway?

"Scan in the direction of the TACAN. What's that over there? Another row of lights next to some big buildings that could be hangars. I'm sure this time it is not a runway, but perhaps it's a taxiway or a ramp. Any concrete in a storm at this point. Fuel low, fuel low. So, I have that going for me. Time to land and land quickly. Proceed to this second opportunity, only to be amazed with another disappointment. No taxiway, no ramp. Just another road illuminated by lights on poles. Too skinny, too short to land. Once again, back to the question: Where is the runway?

"What's that over there? Off to my left? A lighted windsock. Where there's a windsock, there's got to be a runway. In extremis now. Have to find. Thinking about ejection options. Got to find that runway. I need more light. Gear, flaps down, landing light on. Bunch of haze. Going lower and lower. Good radalt. Point at the windsock. Begin to S-turn back and forth across my course line. Another windsock down the way from the first. S-turns continue. What is that? The runway. Too much runway behind me to land, so here we go. A 45-degree turn to the left. Hold for a few potatoes, now back to the right for a tear-drop arrival. Roll out on what I hope is final. Lower and lower. Where is it? Where's the threshold? Still enough gas for a go-around if required. There it is. Velocity vector three degrees down. I see the centerline. How far down am I? Any doubt on stopping, take it around for another try. Touchdown. Nine board. Sierra hotel. I can stop it from here.

"Way too much excitement. Landed a fully loaded, low state, Super Hornet on a dark, strange field in the middle of country X. Out of ideas. Had to land or eject."

What did I learn? Plenty. All my problems started by a less-than-optimum attempt at in-flight refueling. We all know the take-up on a WARP is scary at best, but I can't blame the tanker because my plug was not textbook. I made an error in the basics.

Crew coordination works even in a single-seat airplane. The brain already was mushing when I received a little help with the initial steer. That steer helped tremendously as the selected field was not one we had briefed in our element brief.

My survival instincts took over, big time. I was not going to give up. I was going to land or eject, but the latter wasn't going to happen until I had made every attempt at the former.

Where were my night-vision goggles? On my helmet. I never thought about swinging them down; chock it up to brain mush. Goggles would have made my situation a lot easier, especially since I have made many goggle, light-off landings while evaluating goggles in a former life.

They say any landing you can walk away from is a good one. There's some truth in that statement. But what about those occasions where you barely can walk because of too much knee-shaking caused by too much excitement.

Cdr. Penfield is the commanding officer of VFA-115.

ORM Corner

Are You Ready to Fly?

By HM2 Jason M. Pollock

I walked into the brief with my Cat. I aircrew student, who was ready to knock out his SAR 2 syllabus flight. It was a typical MH-60 flight day: brief at 0900, launch at 1130, and land at 1530. My student and I had tried twice the previous week to complete this flight, but the June weather in "sunny" San Diego hadn't cooperated. With this week's weather finally above minimums and improving, we hoped to get the X.

The brief covered our aircraft assignment, mission, EPs, and other standard information. We got to the portion of the brief where we discussed operational risk management (ORM).

Our safety officer had introduced a new ORM form that was a significant change from the old one. A few of the changes incorporated aircrew-performance calculations: adding total helicopter-aircraft commander (HAC) time, as well as total flight time; and, rather than a low total points indicating low risk, the higher the total points, the higher the perceived safety margin.

In addition, the human-factors (HF) section

Photo by PH2 Michael Sandberg
Modified

ORM Corner

Please send your questions, comments or recommendations to:

Ted Wirginis, Code 11
Naval Safety Center,
375 A St.,
Norfolk, VA 23511-4399.
(757) 444-3520, ext. 7271 (DSN-564).
E-mail: theodore.wirginis@navy.mil.

was adjusted. With our old ORM form, we were mandated to take points for things like birth, death, marriage, divorce, and an imminent move. Any other HF points taken were based on ambiguous personal criteria. For instance, "I'm a little bit stressed; I'll take a point."

On the new form, the five–step ORM process, the four principles of ORM, and a risk-assessment matrix were added to the top of the form. Any HF that didn't fit into the above categories was to be evaluated, using the entire process. This new system forced us to identify the risks associated with our HF and actually to think about the risk.

I initially thought the system was silly. Seriously, we're professionals; we can compartmentalize and do our job. Then, during the brief, I actually used the process and thought about my experiences in the previous month. I was under unusually high mental strain. My relationship of four years was ending. My 7-year-old daughter had been with me for the last two weeks for her summer visitation, and she was starting a new, less structured and less supervised day-camp program. I just had moved into my new and more expensive apartment three weeks earlier. These things would and should be stressful to everyone, but I am a professional aircrewman and a fleet-replacement-aircrewman instructor. So, when asked about human factors during the brief, I responded with my standard, "I'm compartmentalized and ready to fly."

Aircraft turn-up and takeoff were uneventful, and we were en route to the dips. Finally, we would complete a SAR 2 syllabus flight for my student. He was an above-average student and was doing a great job. He quickly and appropriately responded to all the emergency procedures I threw at him. His headwork and CRM were good, but something was missing; that something missing was with me.

I couldn't concentrate. I missed radio calls. My CRM was breaking down. Why? I was thinking about my daughter's day and how I was going to feel during the relationship-ending process. I also hoped everything would work out with my new apartment, and I wondered how I would make ends meet while my daughter stayed with me. I thought about everything but flying low-level over the ocean in a potentially dangerous training environment. I was risking the lives of four people, including myself, and I had no business being in the air.

After my realization, I increased my efforts to concentrate on the task at hand. The mission was completed uneventfully, and we went home to hot seat and crew swap the aircraft. I went to my flight surgeon and downed myself for a couple days, got my head straight, and returned to the flight schedule "compartmentalized and ready to fly."

What did I do wrong? First, I didn't tell my crew during the brief I had stress that might affect my performance. Second, I overestimated my abilities, based on the idea I had something to prove: I had to be a hacker. My thoughts were, "I am a professional aviator, and we compartmentalize. I have a job to do. If I can't keep my head straight all the time, regardless of my stress, then I don't belong with this group of professionals." After all, the only thing that matters is getting out the mission—right? Wrong!

As a professional aviator, and more so as instructors, we have a responsibility to our crew, our students, our aircraft, and certainly to ourselves to make reasonable and appropriate decisions based on changing situations. This concept includes internal, as well as external factors. Yes, the flight schedule and productivity of your squadron may be affected, but it will be significantly more affected if you and your crew are involved in a mishap because you weren't totally thinking about the mission at hand.

HM2 Pollock flies with HC-3.

Another Cracked Windshield

By Lt. Gregory Sutton

Before Operation Iraqi Freedom kicked off, our ready room had discussed how we would deal with emergencies during combat operations. When an aircraft had a system degradation or emergency and couldn't be flown, our options were to use a spare aircraft or to find an airborne replacement to cover the mission. However, because of 24-hour combat ops, there weren't enough E-2Cs airborne to cover either option.

We recognized the necessity of having an airborne command-and-control (C2) platform. An E-2C coordinates targets for our pointy-nose, bomb-dropping friends or directs the pilots to ground-controlling agencies for close-air support in defense of our ground troops. The Hawkeye crews also maintain blue-on-blue deconfliction, known as airborne battlefield command-and-control communications (ABCCC). We also may have to fly during aircraft emergencies that call for landing as soon as practical, or even landing as soon as possible. Our ops situation was a necessary reality during wartime; to get the right air assets to the right place. On some occasions, we were ready, and did accept a certain level of risk, which, under normal peaceful conditions, we never would have accepted.

Several times I had a "windshield heater element failure/cracked windshield" emergency. Depending on whether the problem is with the outer pane or the inner pane determines if we try to land as soon as practical (outer pane), or land as soon as possible (inner pane). The terms "practical" and "possible" became open to interpretation during war.

On one of my flights during the first few days of the war, the pilot's left quarter-panel windshield cracked while at altitude, heading to station over Kuwait. The crack continued to grow and eventually looked like a spider web. The pilot thought the cracks probably were caused by a heater-element failure, and they were on the outside pane.

We stepped through the emergency procedure and discussed the situation. Because the cracks were on the outside, the EP says to land as soon as practical. We didn't consider our situation as severe, and, because the mission was critical, we proceeded toward station. The cracks didn't get worse, and we later returned on board.

A few weeks into the war, about the time when Baghdad fell, the number of bombs dropped rapidly decreased. Our role shifted from one of ABCCC to checking in aircraft in the south area-of-responsibility (AOR). The new check-in mission helped alleviate the AWACS workload. Our new mission was important but not as critical as our earlier tasking. The level of risk we should accept went back to normal levels. Our command recognized that if the plane was down for maintenance, the plane was down, and emergencies were priority over the mission—the same necessity wasn't present.

About this time, the war was winding down, and I was the mission commander during another flight with a windshield incident. About 20 minutes after we had launched off the boat in the North Arabian Gulf, we headed to on-station in Iraq as the south AOR C2 check-in platform. While still close to Kuwait, our crew in the back of the aircraft focused on setting up for the mission and relieving the other E-2C. Unexpectedly, the copilot called on the ICS for everybody to don their oxygen masks. We hesitated for a second, unsure if we correctly had heard him, but then we quickly donned the masks while asking about the situation. He told us the pilot's front windshield was cracked badly, and we were going to descend and return to the carrier. The descent isn't part of the procedure, but the windshield appeared to be severely cracked, and the pilots were worried about explosive decompression if it caved in. Immediately after we had donned our masks, I had the radar operator watch our scopes to provide ownship flight-following for traffic while we descended. The air-control officer assisted with communications, notifying units we were declaring an in-flight emergency and would not get on station. Meanwhile, the pilots and I (as the combat-information-control officer) stepped through the EP.

We leveled at a lower altitude, and the other two NFOs and I removed and restowed our masks because they weren't necessary. The mask is one less thing we would have to remove in the event of a ditch or bailout. The pilots kept their masks on, with visors down, in case the windshield shattered and shards of glass flew through the cockpit. Because of the numerous cracks, the pilots weren't sure if any cracks were on the inside pane. The cracks continued to increase as the pilots saw scorch marks and air bubbles—indicative of delamination of the adhesive layer that holds the two panes together.

As we flew toward the carrier, we asked for a Hawkeye rep to coordinate our return. We passed information on the cracked windshield to our rep and said that we were RTB. What we got in return was perceived, by us, to be pressure from the rep to return to the mission. From our viewpoint, that idea was not a good one. Our crew discussed the options, and we agreed that returning to the ship or diverting to an airfield were the only two acceptable options.

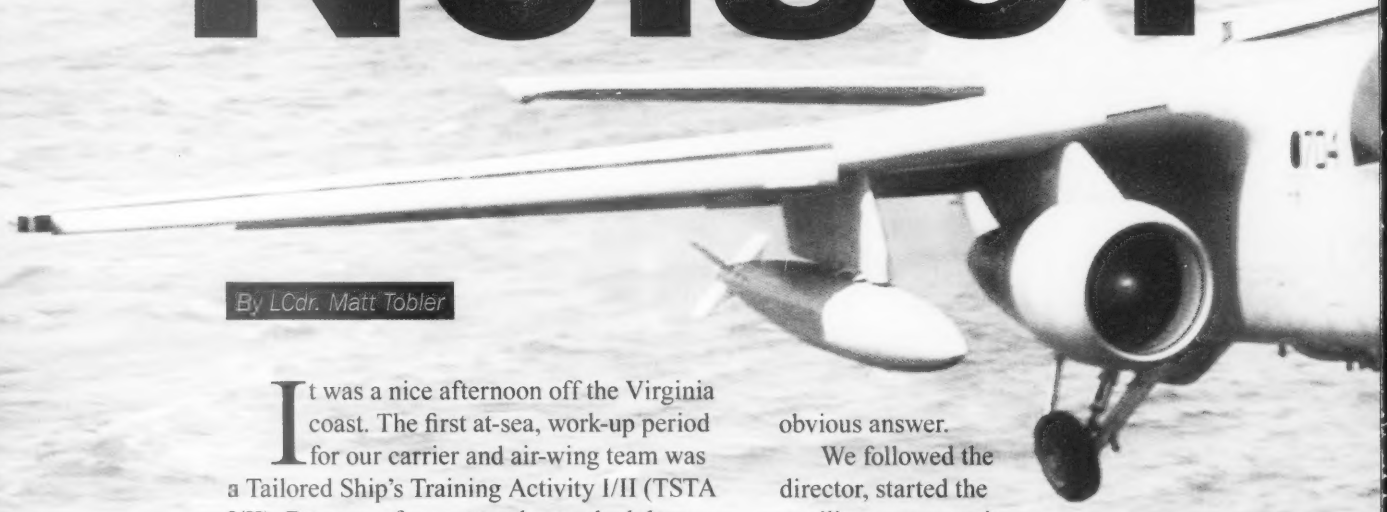
Because we had plenty of fuel, we were willing to remain overhead until the next recovery. Fortunately, the Air Boss recognized the severity of the situation and provided a ready deck upon our arrival. We landed without incident.

The postflight inspection indicated all of the cracks were on the outside pane, which, according to the EP, calls for landing as soon as practical. However, because of the obvious delamination, which had not been evident in-flight from the cockpit, the EP calls for a landing as soon as possible.

The flight was a good lesson on risk management. The incident occurred during a decidedly vague transition period in the war when squadron aircrew started talking about reducing the level of risk they previously had been willing to accept.

Lt. Sutton flies for VAW-116.

What Was That Noise?



By LCdr. Matt Tobler

It was a nice afternoon off the Virginia coast. The first at-sea, work-up period for our carrier and air-wing team was a Tailored Ship's Training Activity I/II (TSTA I/II). Because of recent work-up schedule compression, some perceived, if not real, pressure existed to "get up on the step" as soon as possible to support early-deployment options.

The squadron still was in the midst of numerous aircraft modifications and transfers as we readied our eight jets. The maintenance department was digging in for the uphill battle, working on the hard-downing discrepancies, while supporting a typically aggressive air plan. Our spirits began to look up as my pilot and I saw the gentle crest of a centered ball crossing the ramp for the OK 3-wire, following a routine mission-tank, yo-yo event.

We hit the deck, went to full power, tugged against the straps, heard three seconds of buzzing vibration, pulled the throttles back, brought up the hook, folded the wings, and taxied clear of the landing area. "What was that noise?" my pilot casually asked, as if my additional 1,500 hours of experience somehow would provide the obvious answer.

We followed the director, started the auxiliary-power unit, gave a thumbs up to the flight-deck coordinator (FDC), signaled an "up" jet, and received the "hot switch" signal in return.

"Not sure, the noise sounded like a binding brake or an ECS (environment-control system) vibration," I guessed. "The motors look good across the board."

We taxied unnecessarily close to the edge of elevator 1 (EL1), then missed the Prowler's jamming pod by mere inches—standard parking on the boat. My pilot verified he had not touched the brakes on the rollout. We came up on the power for the final turn to our resting spot on EL1 and heard nothing but the soft hum of the mighty TF34s. We stopped, set the parking brake, and waited to get wrapped up.

"Roger that, it might have been a vibration from the ECS ducting when we went to full power," I replied, and started to clean up my cockpit for the hot switch.

Photo by PHAN Chirs Thamann

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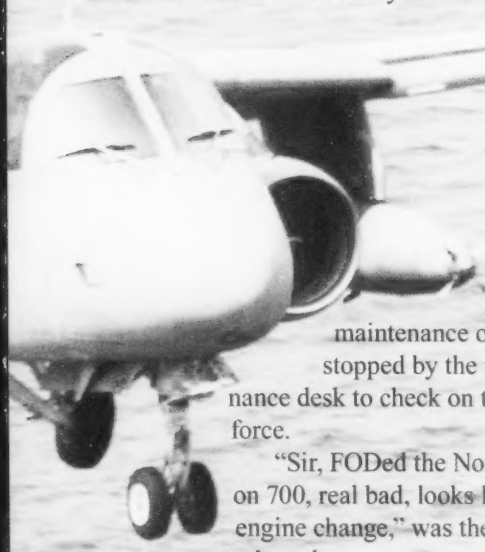
We secured the No. 2 engine, safed our seats, and signaled for the door to be opened. "I'm hopping out, see ya outside," I said.

I passed the status of the jet to the incoming right-seater, except for the vibration we heard in the landing area. I high-fived the maintenance officer (MO) as he manned up the left seat, and debriefed the FDC on the jet's status. My pilot and I went to start the toils of paperwork: CVIC, NAVFLIRs debrief sheets, tanker cards and gripes.

After chow, I completed some correspondence and headed to the ready room. Because I



was the incoming maintenance officer, I stopped by the maintenance desk to check on the air force.

"Sir, FODed the No. 1 motor on 700, real bad, looks like an engine change," was the maintainer's reply.

Did you ever get a feeling like you did something wrong and someone was about to find out? I scampered to find the MO to hear his story, already having a good idea what I was going to hear. He described a somewhat uneventful flight, but he did mention a high-pitched tone from what sounded like the No. 1 motor when he went into tension on the catapult. The pilots talked about the tone, and, after reviewing the engine instruments (all which looked good), they went flying. The MO also said the No. 1 engine was a fraction weaker throughout the flight, but no additional suspicious sounds were heard, and no abnormal engine indications were observed. They recovered uneventfully two hours later.

The ensuing few hours were a blur, and all I remember is the sight of the No. 1 engine's fan blades all chewed up and the outcome of a series of discussions leading to the suspected cause of the incident. Apparently, a brake key broke off the left main wheel on the trap of my flight, bounded forward in the landing area, and subsequently was sucked into the intake when we went to full power in the wires. The ECS buzzing and vibration I thought we had heard actually was the brake key tearing up my fan blades *(see photo below)*, which only took a few seconds. Because of the hot switch, no aircrew or maintainer had time to notice the No. 1 fan blades. Though the indications of the problem now seem obvious, they weren't at the time, especially since the engine instruments showed no performance degradation.

There are lessons to be learned and relearned. The passdown from one crew to the next on a hot switch is critical. Events that don't seem extraordinary may provide a valuable piece of the puzzle to the next crew when they face something out of the ordinary. Armed with the information we had—a buzzing vibration when we landed—the MO could have pieced together the No. 1 engine had a serious problem.

No crew member should be convinced something is not serious when indeed it may be. My junior pilot may have had an inkling something more serious than an ECS vibration was wrong, but perhaps my experience with lots of strange Viking noises over the years convinced him that he didn't have to worry.

No sortie-completion rate in any training exercise is worth not taking the time to investigate a strange sound. We easily could have shut down both engines or at least recommended No. 1 be serviced after the hot-switch crew got No. 2 started. That's a hard call to make; obviously, you can't go chasing every strange vibration, thump, rattle, squeal, and hiss on an S-3. Use your best judgment and experiences to classify them as normal or abnormal, then follow through.

LCdr. Tobler flies with VS-24.

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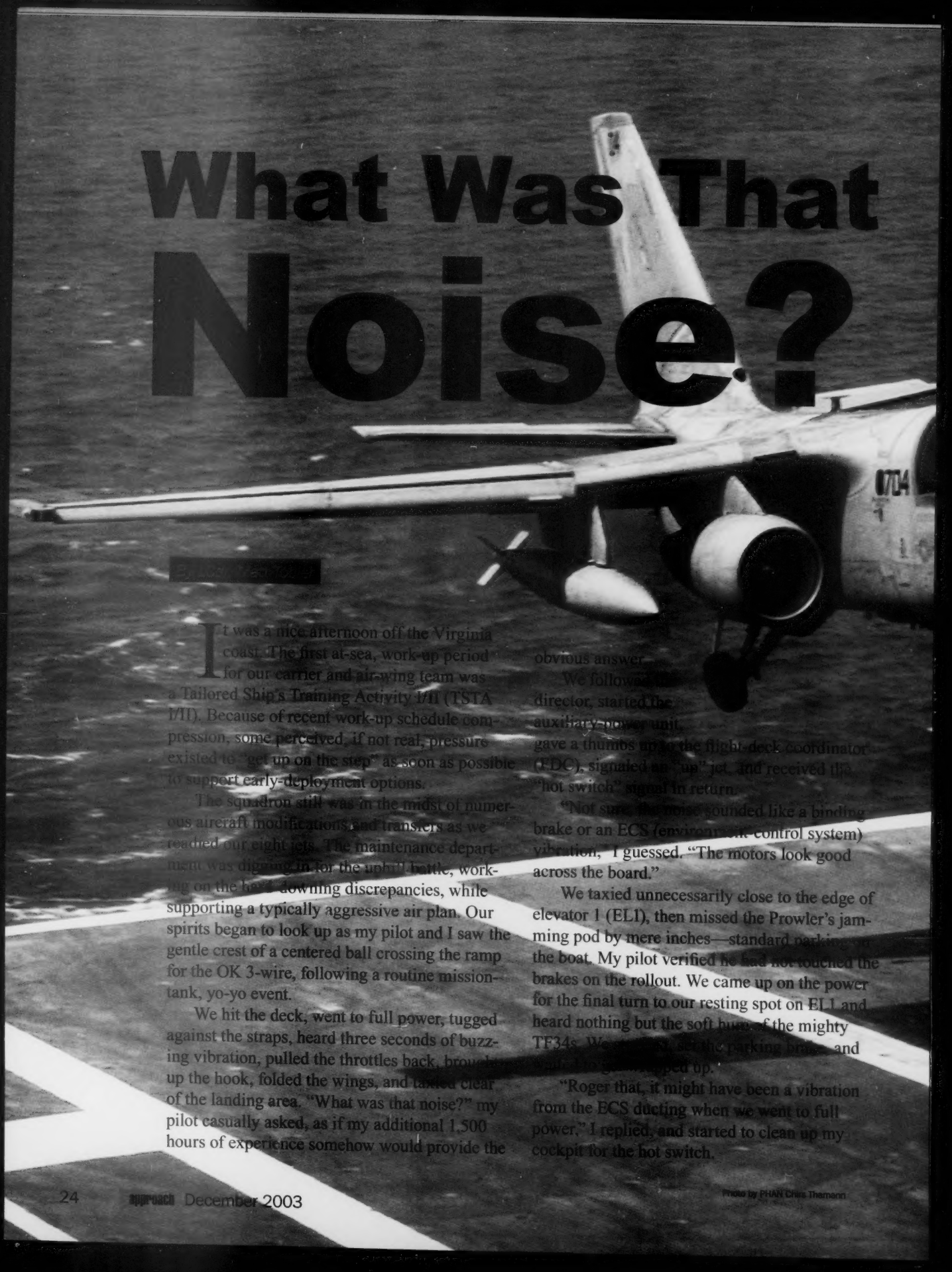

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Photo by PHAN Chris Themann

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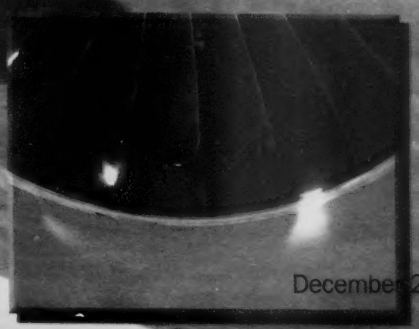


Blue-Water-Divert Operations:

TACAIR's Classic Oxymoron

By LCdr. Stephen Gaze

How many times have you heard the CVIC briefer say, "Mother is working blue-water operations; your primary divert is NAF Western Pacific, bearing 350 degrees for 300 nautical miles."

When conducting true blue-water operations, divert fields are unreachable, even when you have your own tankers. However, in the transition zone from blue to brown water, the perception of blue-water operations leads many aircrew to forgo thorough consideration of the divert option.

We were three months into an extended WestPac deployment. The ship was transiting north to a port call in Yokosuka, Japan, after operating near Guam for several weeks. As we manned up our mighty Prowler for the first launch of the day, the weather was beautiful, and mother was working Case I operations. It was a great day to be an ECMO in the front seat. Our fuel ladder was planned for a standard Case I recovery, 4,000 pounds of gas 30 minutes after the next planned launch.

Fortunately, the 1+15 cycle time prevented us from converting all our dead dinosaurs into heat, noise and thrust, and we failed to reach our fuel ladder. As I checked in through strike and marshal, we heard the dreaded call, "Mother's working Case III, weather is 1,000 feet, broken."

Suddenly, we were working a much more stringent fuel ladder—2,500 pounds higher. As we proceeded to the marshal stack, I saw the sky absolutely was clear 20 miles east of the carrier. But, to get the most training out of our OPTAR dollar, the ship had chosen to operate under a solid frontal layer that had moved in.

As we pushed from 6,000 feet, things started to get more interesting as paddles called,

"99 Shogun, landing lights on."

Descending through 2,000 feet, we were enveloped in clouds. After the ACLS lock-on at five miles, we proceeded to three miles and started our descent.

"503, three-quarter mile, call the ball."

"503, clara."

"Drop lock."

"Wave off, wave off."

The fun factor started to go away, especially considering we had gotten down to 200 feet and one-half mile but still hadn't seen the ship. Time for round two. Our fuel now was down to 6,000 pounds.

"503, three-quarter mile, call the ball."

"503, clara."

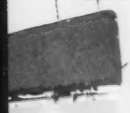
"Paddles contact."

"Come left," after we started large left-to-right drift

"Wave off, wave off."

As we waved off, we caught sight of the deck and flew right over the tower. Several witnesses placed us at 50 feet above the tower. A strong right crosswind, which went away at 200 feet, had turned our crab into a large left-to-right drift in the middle, preventing a safe landing.

The carrier was working blue-water operations. NAF Atsugi was 300 miles to the north, and Iwo Jima was 350 miles to the south. Twelve approaches by air-wing aircraft resulted in eight waveoffs and only four successful arrestments. The weather at NAF Atsugi had gone down to 100 overcast and one-half-mile visibility. Iwo Jima, here we come.



The EA-6B PCL has bingo charts only out to 300 nautical miles. A quick extrapolation by the backseaters came up with a requirement of 6,800 pounds for the bingo profile, assuming the standard 50-knot headwind. Simultaneously, squadron representatives in CATCC had come to the same solution. We were directed to rendezvous with an S-3 tanker and take 3,000 pounds of gas. After refueling, our fuel state was a semicomfortable 7,500 pounds. The pilot flew the bingo profile to 35,000 feet on our way to Iwo Jima.

As we flew south, our crew-coordination skills came into play. ECMO 3 backed me up on the charts and helped monitor time, distance and fuel remaining. ECMO 2 was into the publications and used the third radio to establish communication with the Japanese controllers on the island. I got traffic advisories from our controllers on the carrier and also talked with our fellow air-wing buddies heading south.

As we flew farther south and our fuel totalizer counted down, we anxiously awaited the TACAN lock-on. The weather started to break up, and we planned for a visual arrival into Iwo Jima. The Prowler bingo profile includes arrival overhead the destination at 10,000 feet MSL, with 2,000 pounds of gas. We had started with 700 pounds over the bingo requirement, and headed down a little earlier because of the good weather.

We rolled out on extended centerline and were greeted by 8,000 feet of concrete pointing at the approaches to Mt. Surabachi. We shut down with 3,000 pounds of fuel remaining—coincidentally, the same amount we had taken from the tanker.

In all, seven aircraft bingoed to Iwo Jima from that recovery: our Prowler, three Hornets and three Viking tankers. After a night on the beach with the Japanese Self Defense Forces providing lodging and meals, we launched the next day for a long 550-mile flight to the carrier. Our flight ended in a successful Case III approach and landing, with a high ceiling at 1,000 feet.

What did we learn? Always be prepared to divert. Bring approach plates, even if you don't think you'll need them during blue-water operations. Despite NAF Atsugi being the primary divert, we didn't have their approach plates. Fortunately, our secondary divert, Iwo Jima, was in the same volume we had been using around Guam, and I still had a copy in my nav bag. One of the CATCC reps had to brief the Iwo Jima approach over the radio to a Hornet pilot as he diverted.

The bingo profile works; we flew it as advertised. We burned most of our gas in the climb, but, once we reached 35,000 feet, we had the fuel to make it all the way.

Our crew coordination extended to the squadron reps in CATCC and the other diverting aircrew. Senior leadership on the ship were involved closely.

The term blue-water operations implies the carrier will keep launching tankers until everyone traps successfully or barricades. On our recovery, the weather was so bad that paddles could not have gotten everyone safely into the wires or barricades before aircraft had started to flame out. In these situations, when a viable long-range divert is available, it makes sense to divert.

The issue of blue-water versus divert operations has many considerations: number of aircraft airborne, amount of fuel available in the tankers, GSE support at the divert, compatible instrument approaches, diplomatic clearances, and political ramifications. Know the options, and be prepared.

LCdr. Gaze is an ECMO with VAQ-138.

Cobra Off the Cat

Photo by PH3 Todd Frantom
Modified

By Lt. Mark Crowe

The carrier and air-wing team neared the end of a two-and-a-half-week at-sea period off the east coast of Virginia. The weather was beautiful, and I was scheduled to lead a division of Hornets on a routine air-to-air mission with a Case I launch and recovery.

Following the brief, I walked through maintenance and read the book. I noticed the jet had produced a few random flight-control Xs on a catapult shot but nothing that affected controllability or would not reset. Also, both flight-control computers had been replaced before my flight, so everything looked kosher.

Preflight, start, and pretakeoff checks were normal, right up until launch. I saluted the catapult officer and sped down the cat stroke. My head went forward a little from the deceleration (as it always does), and my chin immediatelywas pinned to my chest. The jet inexplicably had pitched nose-up, and I instantaneously felt the force of roughly three Gs; the AOA tone quickly followed. With my peripheral vision, I saw the vapor trails coming across the leading-edge extensions. About a second and a half later, I got my hand back on the stick, my eyes on the HUD, and began pushing over to level off at 600 feet.

My first thought was to descend to 500 feet and continue with the Case I departure, then return overhead to troubleshoot. I clearly was working on stem power. The Air Boss, on the other hand, after asking if I had a problem, recommended I climb to 2,000 feet to troubleshoot.

My flight-control display showed I had Xs in two channels of both stabilator servos and a single X in my left leading-edge-flap servo. After talking with the Hornet rep, we decided I should climb above 10,000 feet

to investigate. Once at altitude, I got a good reset of the flight-control system and a good check of the aircraft in the landing configuration. From then on, it was an uneventful flight to Oceana for a short-field arrestment

Playing those few seconds over again, a couple of thoughts went through my mind. My first thought was I inadvertently had pulled back on the stick at the end of the cat stroke. (In the early days of the FA-18, with pilots sometimes grabbed the stick too soon after the cat stroke, often resulting in an ugly, pilot-induced oscillation.) Because I was aware of the issues of stick movement, my forward stick input after that catapult was not an instant one. With the jet in full afterburner, I knew I had plenty of excess power, so I gradually pushed the stick forward to level off. I was a bit disoriented, so my other thought was to maintain the altitude sanctuary of the structured CV environment and not to climb through pattern or break altitudes without having a good feel for where other aircraft were.

The event didn't feel like that big a deal, so I was prepared to recover aboard the ship. Fortunately, enough people had seen the cat shot to know that landing on the ship and trying another shot would not be a good idea, so I got to go home a day early.

What had happened? After pulling the maintenance data from the aircraft, the troubleshooters discovered the flight controls went to MECH ON for about three and a half seconds after the catapult stroke. The PLAT tape showed the aircraft reached a 45-degree-pitch attitude within a second of coming off the catapult. The maintenance data also revealed the aircraft decelerated to 150 knots, and AOA increased to above 27 degrees during that pitch-up. On-speed at my takeoff was about 173 knots and 8.1 degrees AOA. I didn't think my launch looked nearly as dramatic as it felt. It was not until I reviewed the PLAT tape two days later that I realized how close the aircraft had been to departing controlled flight at 100 feet.

After two weeks of scrubbing the aircraft for causes, the problem was traced to a loose wire in the back of the emergency-battery contactor. This problem was something no one could have predicted or seen.

I pulled away a few big lessons from this incident. Use afterburner on the catapult; it had been my habit pattern before this incident, and I will continue to do so. Not only is using afterburner the first step in our settle-off-the-catapult procedure, but, in this case, it also gave me enough airspeed and time to fly away from an extreme aircraft attitude.

Even though it was day VFR, the first place I looked after I could pick up my head was the HUD. This action helped to replace the situational awareness the cat shot had sucked away. Had this situation occurred at night, a look to the HUD would have been even more critical, especially without the benefit of all the peripheral-vision cues present during the day.

I did not consider the eject option. The aircraft was under control within three seconds after the catapult shot, so I never considered pulling the handle. If I had had a nose-down pitch or an uncontrollable yaw or roll, I quickly would have been at the edge of the safe-ejection envelope.

For me, this incident just reinforced the fact that anything can happen, especially during something as dynamic as a catapult shot.

Lt. Crowe flies with VFA-87.

It already had been an arduous night of deck-landing qualifications. The latest home-field weather report relayed by the ship was 900 feet overcast and visibility unrestricted, so we were planning on a painless trip home. The remaining tasker on our more-than-eight-hour mission was a PAR to NAS North Island (NASNI) for our junior pilot.

My first clue something was amiss came when we checked in with SOCAL approach, and the controller responded with vectors for the GCA before I had requested one. Our second clue came moments later when a Southwest Airlines pilot reported a missed approach from Lindbergh field (only one mile from NASNI) and requested vectors to his alternate. I glanced at my copilot and said, "You know things aren't good when the big boys are missing."

One of our two radios was not working, so I asked SOCAL if I momentarily could go off frequency, with the intent to contact metro for weather. The harried controller replied NASNI tower was reporting 400 feet overcast with five-eighths-mile visibility in mist; they could not see the approach end of either runway, and visibility rapidly was degrading.

We checked in with the NASNI final controller for the straight-in GCA to runway 29. My copilot flew a superb approach, and, at 450 feet, I started to make out the runway-end lights slightly to our right. Feeling everything was coming together, I took the controls and reported the field in sight. I was a little surprised I'd

SAY IT AIN'T SO

By LCdr. Kieran Twomey

missed the high-intensity lights and was even more surprised when the controller immediately switched us to tower. My copilot switched the only radio as I descended toward the approach lights, still wishing the GCA guy had continued controlling us all the way down as they do during VFR practice approaches. As the lights drew near, the picture started to clear. I was down to 200 feet, and the runway lights illuminated the sides of—warehouses!

I realized we were about 200 yards off course to the right of the runway. I instantly turned the helicopter to 180 degrees and climbed, in accordance with our missed-approach instructions. I sheepishly told tower I had "lost sight" of the runway and was executing the missed approach. We diverted to a field slightly inland and still VFR and landed without incident. My postflight analysis of the episode left me with some lasting impressions.

Never believe the last weather report. It's history, and, regardless of the source, it should be treated with great suspicion. I should have contacted metro, PMSV or FSS, to update the weather I had received from the ship while en route to my home field. A weather update would have given us a chance to brief the full approach and to discuss alternatives before we were thrown into the lion's den. Once you're inside the busy airspace with constant radio chatter and direction, you can't be too effusive with your brief.

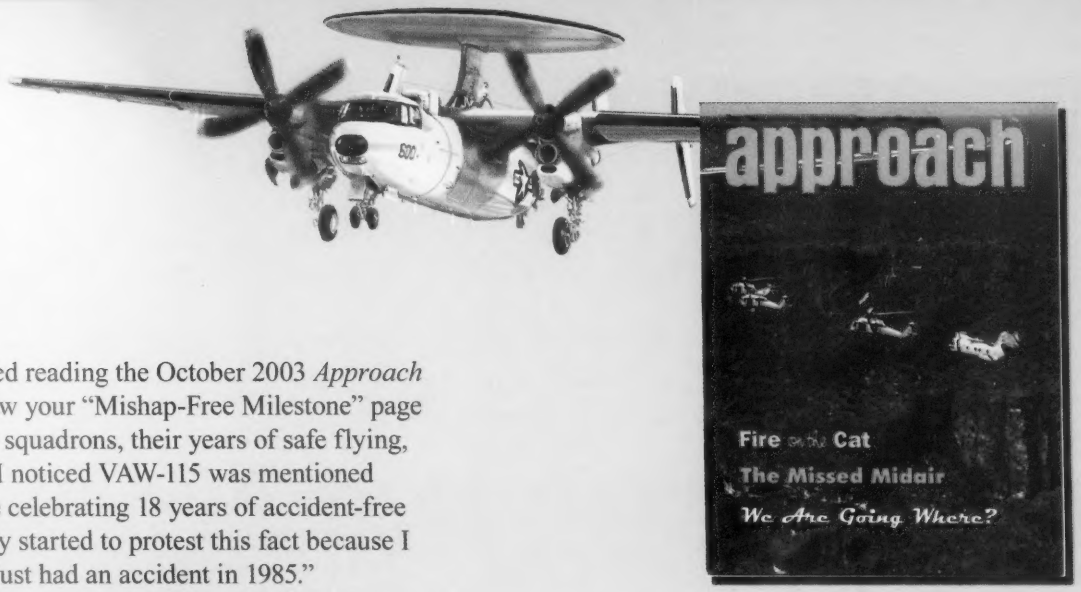
Don't think you can take the controls in IMC conditions and fly a VFR scan to the deck. I never would have believed I would make this mistake with the hundreds of mishaps caused by it, but, there I was, trying to will myself into VMC when we still were IMC. If you don't have a visible horizon, you're not VMC—don't kid yourself.

Watch out for noise-abatement procedures. I've flown hundreds of approaches into this airport, and 99 percent of them have been offset for noise abatement. Everything I'm used to—the landmarks, the approach lights slightly off to my right, the need for a left turn on short final—is predicated on the offset approach. In actual IMC, the approach turns into a straight-in, and everything is different.

Don't be afraid to divert. The only thing scarier than this approach was the drive home in zero-zero conditions. The conditions degraded so rapidly that, 20 minutes after we had landed at our divert, we couldn't find the helicopter on the tarmac. One more approach at home field and we probably would have had to fly 70 miles to the desert.

Aside from a bruised ego and possibly waking up some guys at the North Island BOQ, no harm was done. The helicopter came home the next morning, and everyone slept in their beds that night. Next time, if I'm at decision height and don't know it's the runway, I'm logging more flight time.

LCdr. Twomey flew with HSL-47.



I just finished reading the October 2003 *Approach* magazine and saw your "Mishap-Free Milestone" page that lists various squadrons, their years of safe flying, and total hours. I noticed VAW-115 was mentioned and that they are celebrating 18 years of accident-free flying. I mentally started to protest this fact because I thought, "They just had an accident in 1985."

After doing the math, I chuckled, but then the sobering reality of that August when my friend Chris Mims died in an E-2 off USS *Midway* (CV 43) came rushing back. Those thoughts coupled with the comments by Radm. Brooks in his commentary about the hard numbers of casualties in accidents over the past five years. I thought, "Those numbers have names" and families who go to memorial services like the one I attended in Bedford Stuyvesant, Brooklyn, shortly after Chris' death. That was my first hard "gut check" about the realities of life and death as an aviator and the accidents that can happen.

I've been a part of some form of aviation for almost 20 years now, and I've seen the great strides in making flying safer. There have been constant improvements to NATOPS, the enhanced GPWS system, and TCAS (traffic-alert and collision-avoidance system) on the airliner I used to fly. I applaud your continuing efforts to make the unnecessary deaths fewer and farther between, and I also applaud the admiral's goal of dramatically decreasing the death rate in accidents. Keep up the good work.

Cdr. John Clubb (Ret.)

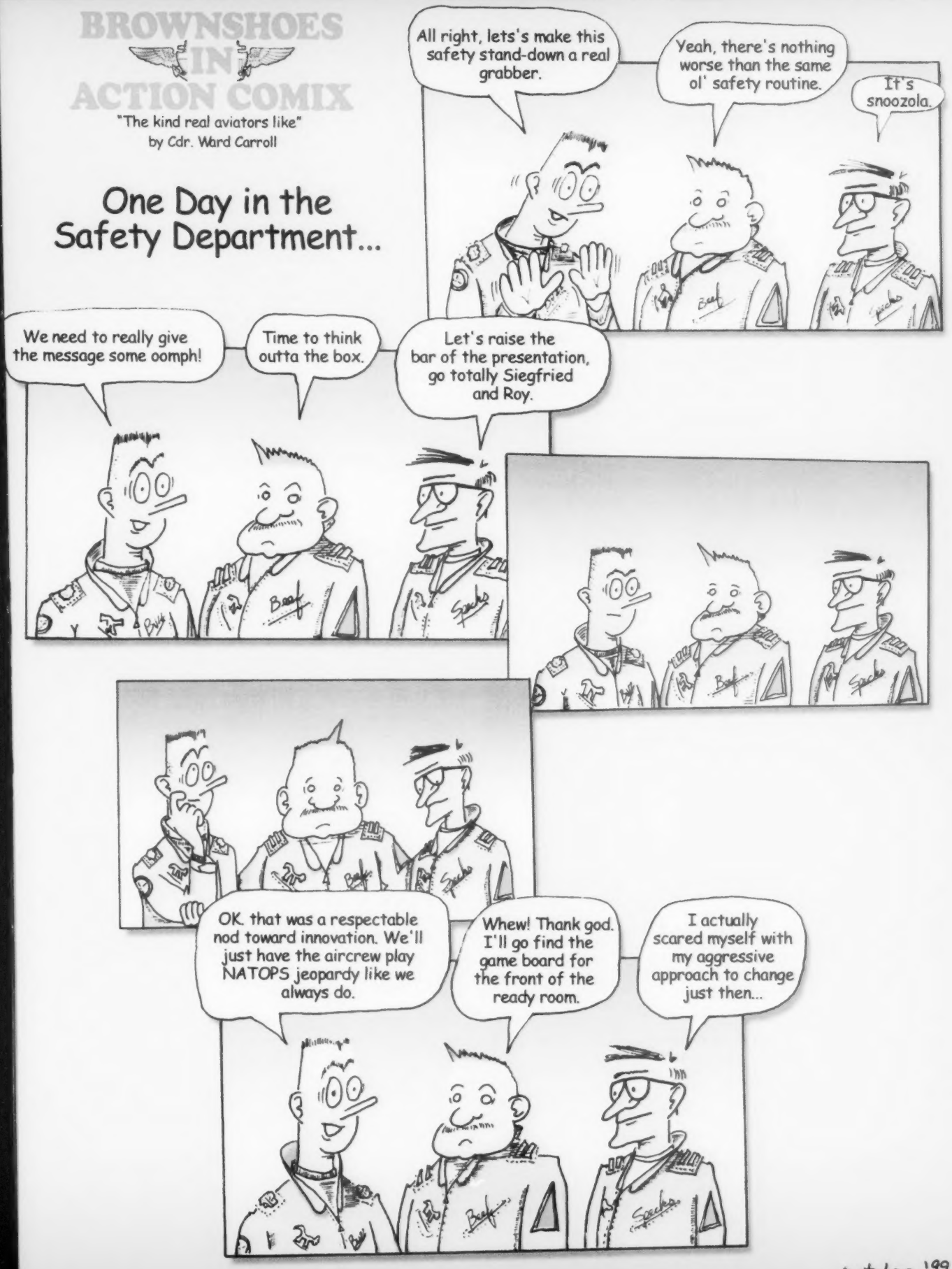
Mishap-Free Milestones

VAQ-140	18 years	27,489 hours
HS-48	8 years	
HMH-36	14.5 years	10,000 hours
VFA-137	12 years	
VFA-115	9 years	
HS-15	7 years	22,500 hours
VFA-195	21 years	90,000 hours
VAQ-128	6 years	8,860 hours
HS-2	18 years	56,226 hours
HMLA-369	12 years	70,000 hours

BROWNSHOES IN ACTION COMIX

"The kind real aviators like"
by Cdr. Ward Carroll

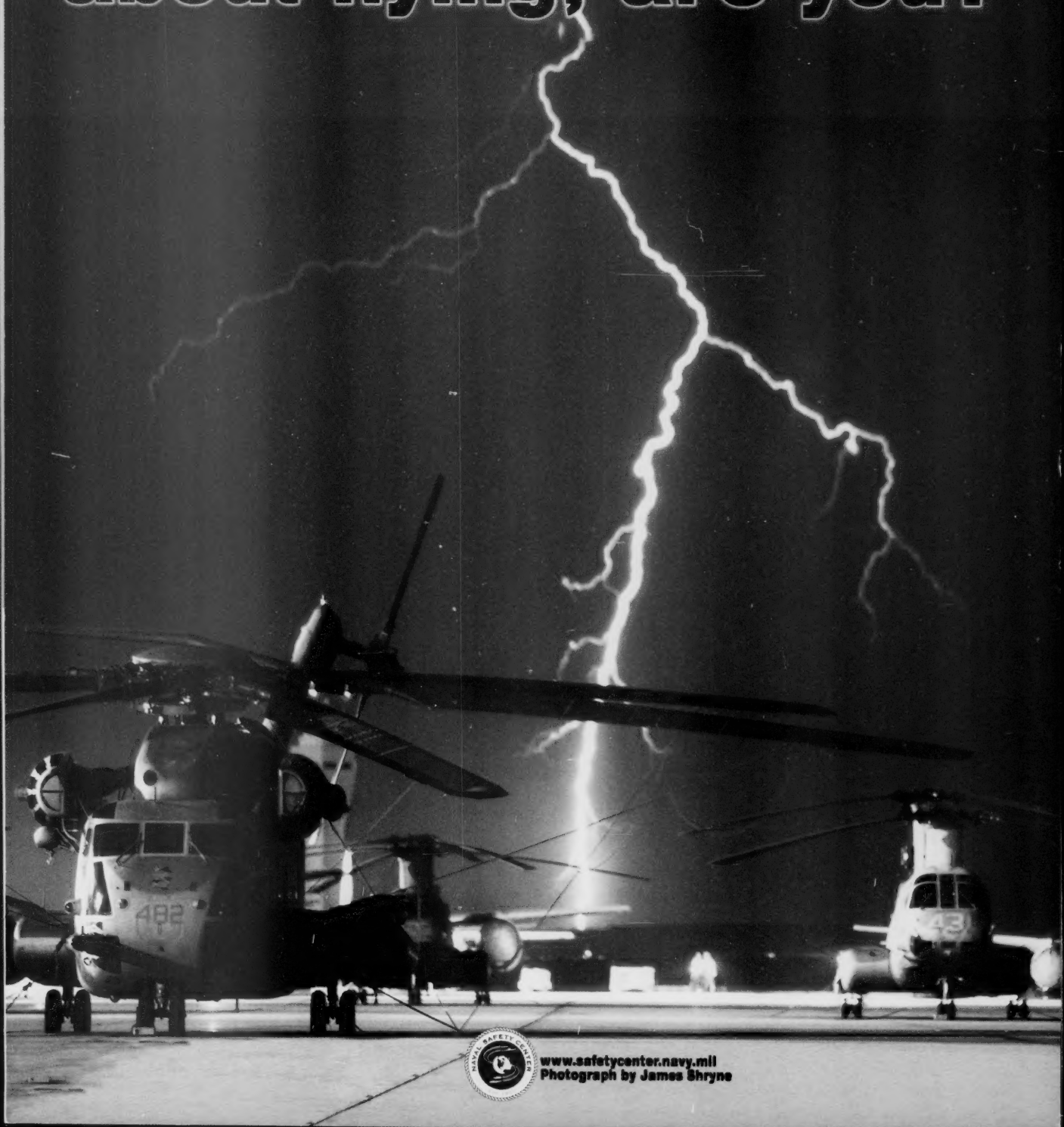
One Day in the Safety Department...


All right, lets's make this safety stand-down a real grabber.
Yeah, there's nothing worse than the same ol' safety routine.
It's snoozola.
We need to really give the message some oomph!
Time to think outta the box.
Let's raise the bar of the presentation, go totally Siegfried and Roy.
OK. that was a respectable nod toward innovation. We'll just have the aircrew play NATOPS jeopardy like we always do.
Whew! Thank god. I'll go find the game board for the front of the ready room.
I actually scared myself with my aggressive approach to change just then...

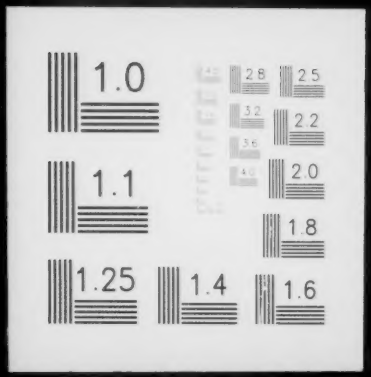
October '99

Ready Room Gouge

You're not thinking about flying, are you?



www.safetycenter.navy.mil
Photograph by James Shryne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